Draft: 11/27/02

Finding of the Department of Fish and Game
With Respect to Implementation of the Quantification Settlement Agreement and the Salton Sea
Made Pursuant to Section 2081.7(c) of the Fish and Game Code

Summary

Pursuant to Section 2081.7(c) of the Fish and Game Code, staff of the Department of Fish and Game (Department) has reviewed the activities that would be implemented under the Quantification Settlement Agreement (QSA) and considered the resulting impact on (i) the salinity of the Salton Sea, and (ii) the ability to implement projects to reclaim the Salton Sea that would be consistent with the provisions of the Salton Sea Reclamation Act of 1998 (Public Law 105-372). In its review and consideration the Department has consulted the following documented information:

- Salton Sea Accounting Model output data produced by staff of the Bureau of Reclamation and transmitted to Department staff on November 14, 2002. The Model is described in Section 3.1.4.1 and Appendix F of the *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142).

- October 15, 2002 document entitled *Summary Term Sheet -- Principal QSA Revisions*

- Daily Salton Sea surface elevation as reported by the U.S. Geological Survey at Station No. 10254005

- *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142)

- *Coachella Canal Lining Project Final Environmental Impact Statement/Environmental Impact Report* (State Clearinghouse No. 1990020408)

- *Final Environmental Impact Statement/Environmental Impact Report for the All-American Canal Lining Project* (State Clearinghouse No. 90010472)

Upon review of the available information, the Department concludes that the implementation of the QSA during the first 15 years that the agreement is in effect:

(1) will not result in a material increase in projected salinity levels at the Salton Sea, and

(2) the agreement will not foreclose alternatives for reclamation of the Salton Sea as summarized in Section 101(b)(1)(A) of P.L. 105-372.

Background on Need for Finding

In order to facilitate implementation of the QSA as part of California's plan to reduce its use of Colorado River water to its basic apportionment when necessary,[1] during its 2001-02 session, the Legislature passed Senate Bill No. 482, which was subsequently approved by the Governor on September 16, 2002. Among other matters, Senate Bill No. 482 added Section 2081.7 to the Fish and Game Code, paragraph (c) of which describes a condition precedent to the Department's authorization of take of species resulting from impacts attributable to the implementation of the QSA. Specifically, 2081.7(c) reads as follows:

> "After consultation with the Department of Water Resources and an opportunity for public review and comment, the department determines, based on the best available science, that the implementation of the Quantification Settlement Agreement during the first 15 years that the agreement is in effect (1) will not result in a material increase in projected salinity levels at the Salton Sea, and (2) the agreement will not foreclose alternatives for reclamation of the Salton Sea as summarized in Section 101(b)(1)(A) of the Salton Sea Reclamation Act of 1998 (P.L. 105-372)."

Section 101(b)(1)(A) of the Salton Sea Reclamation Act of 1998 (P.L. 105-372), which is referenced in 2081.7(c) of the Fish and Game Code, tasked the Secretary of the Interior (Secretary) as follows:

> "The Secretary shall complete all studies, including, but not limited to environmental and other reviews, of the feasibility and benefit-cost of various options that permit the continued use of the Salton Sea as a reservoir for irrigation drainage and: (i) reduce and stabilize the overall salinity of the Salton Sea; (ii) stabilize the surface elevation of the Salton Sea; (iii) reclaim, in the long term, healthy fish and wildlife resources and their habitats; and (iv) enhance the potential for recreational uses and economic development of the Salton Sea."

Implementation of the Quantification Settlement Agreement During the First 15 Years

Implementation of the Quantification Settlement Agreement (QSA) would commence in calendar year 2003 and would include the conservation of water by the Imperial Irrigation District (IID) for transfer out of the Salton Sea Basin to the San Diego County Water Authority (SDCWA). The QSA would also provide for additional conservation of water by IID for transfer to the Coachella Valley Water District (CVWD) for use on lands within the northern portion of the Salton Sea Basin. The method of conservation utilized by IID and the schedule of transfers would be in accordance with that stated in the October 15, 2002 document entitled *Summary Term Sheet -- Principal QSA Revisions* (QSA Revision Term Sheet).[2] The schedule of these transfers for the first 15 years of the QSA under the QSA Revision Term Sheet would be as shown in Table 1.

[1] A complete description of the plan is described in the May 11, 2000 working draft document released by the Colorado River Board of California entitled, *California's Colorado River Water Use Plan*

[2] The QSA Revision Term Sheet was negotiated by representatives of The Metropolitan Water District of Southern California, Coachella Valley Water District, Imperial Irrigation District, San Diego County Water Authority, and included the participation of State Assembly Speaker Emeritus Robert M. Hertzberg and Assemblyman Dennis Hollingsworth.

Table 1. Schedule of transfers during the first 15 years of the QSA

Calendar Year	QSA Year	IID Transfer to SDCWA (acre-feet)	IID Transfer to CVWD (acre-feet)
2003	1	10,000	0
2004	2	20,000	0
2005	3	30,000	0
2006	4	40,000	0
2007	5	50,000	0
2008	6	50,000	4,000
2009	7	60,000	8,000
2010	8	70,000	12,000
2011	9	80,000	16,000
2012	10	90,000	21,000
2013	11	100,000	26,000
2014	12	100,000	31,000
2015	13	100,000	36,000
2016	14	100,000	41,000
2017	15	100,000	45,000
Total	----	1,000,000	240,000

With respect to the conservation of water for transfer to SDCWA, the QSA Revision Term Sheet provides that,

> "IID will have the discretion to pick the conservation methodology that assures the achievement of Salton Sea salinity goals and water schedules consistent with State and Federal law, the QSA and related agreements."

Accordingly, IID would implement a program to conserve water for transfer to SDCWA in a manner that does not affect inflows to the Salton Sea that would otherwise take place.

With respect to the conservation of water for transfer to CVWD, the QSA Revision Term Sheet provides that all this water would be conserved through "efficiency conservation" rather than fallowing land. For every acre-foot of water conserved by IID through efficiency conservation measures, the Department presumes that IID's drainage to the Salton Sea would decrease by one acre-foot. Of the water so transferred to CVWD, it is estimated that one-third would drain from CVWD lands and would ultimately be discharged to the Salton Sea. Thus of the 240,000 acre-feet of water to be conserved by IID for transfer to CVWD during the first 15 years of the QSA, it is estimated that approximately 80,000 acre-feet would be discharged to the Salton Sea from the Coachella Valley resulting in a net reduction of inflows to the Sea of approximately 160,000 acre-feet.

In addition to the values stated in Table 1, under the QSA, IID would conserve additional water through implementation of the All-American Canal Lining Project and would make this water

available for diversion by The Metropolitan Water District of Southern California (MWD) at its Colorado River Aqueduct intake on Lake Havasu. Similarly, CVWD would conserve water through implementation of the Coachella Canal Lining Project and would make this water available for diversion by MWD. While these two projects result in the transfer of water out of the Salton Sea Basin, their implementation would not measurably impact the level of the Salton Sea.[3]

Projected Salinity of the Salton Sea During the First 15 Years of the QSA

The Salton Sea Accounting Model[4] was utilized to project the salinity of the Salton Sea during the first 15 years of the QSA. In projecting salinity, the Salton Sea Accounting Model incorporates stochastic simulations, meaning that random samples are taken from a schedule of projected IID inflows to the Sea as well as other variables. In this mode, the model was executed 1,000 times with each simulation or *trace* being a unique result of the randomly selected variables. From the 1,000 traces the following curves were generated:

- mean projected salinity representing the average projected salinity of all 1,000 traces;
- 95-percentile projected salinity, which is the projected salinity for which 95 percent of the 1,000 model traces resulted in values less than or equal to the value plotted; and
- 5-percentile projected salinity, which is the projected salinity for which 5 percent of the 1,000 model traces resulted in values less than or equal to the value plotted.

The area bounded by the 95-percentile curve and the 5-percentile curve represents the range of projected salinities in which 90 percent of the 1,000 model traces fall.

For the first 15 years of the QSA, the mean salinity and the range of salinities projected in 90 percent of the 1,000 traces are shown in Figure 1. For comparison, Figure 1 also shows the Baseline[5] mean salinity and the range of Baseline salinities projected in 90 percent of the 1,000 traces. Figure 1 indicates that there is a slight departure in projected salinities between the Baseline condition and the with-QSA condition. The greatest departure occurs in calendar year 2017, which would be year 15 of the QSA, with projected mean salinity being higher for the with-QSA condition. Projected salinity values in 2017 for each condition are shown in Table 2.

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[3] Imperial Irrigation District, Bureau of Reclamation; March 1994; *Final Environmental Impact Statement/Environmental Impact Report for the All-American Canal Lining Project* (State Clearinghouse No. 90010472); page III-10; and
Coachella Valley Water District, Bureau of Reclamation; April 2001; *Coachella Canal Lining Project Final Environmental Impact Statement/Environmental Impact Report* (State Clearinghouse No. 1990020408); page 3-20

[4] The Salton Sea Accounting Model is described in Section 3.1.4.1 and Appendix F of the *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142)

[5] The "Baseline" condition refers to the no-QSA alternative and is more fully described in Section 2.3.2.1 of the *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142), which shows the projected Baseline salinity in Figure 3.1-31.

Figure 1.

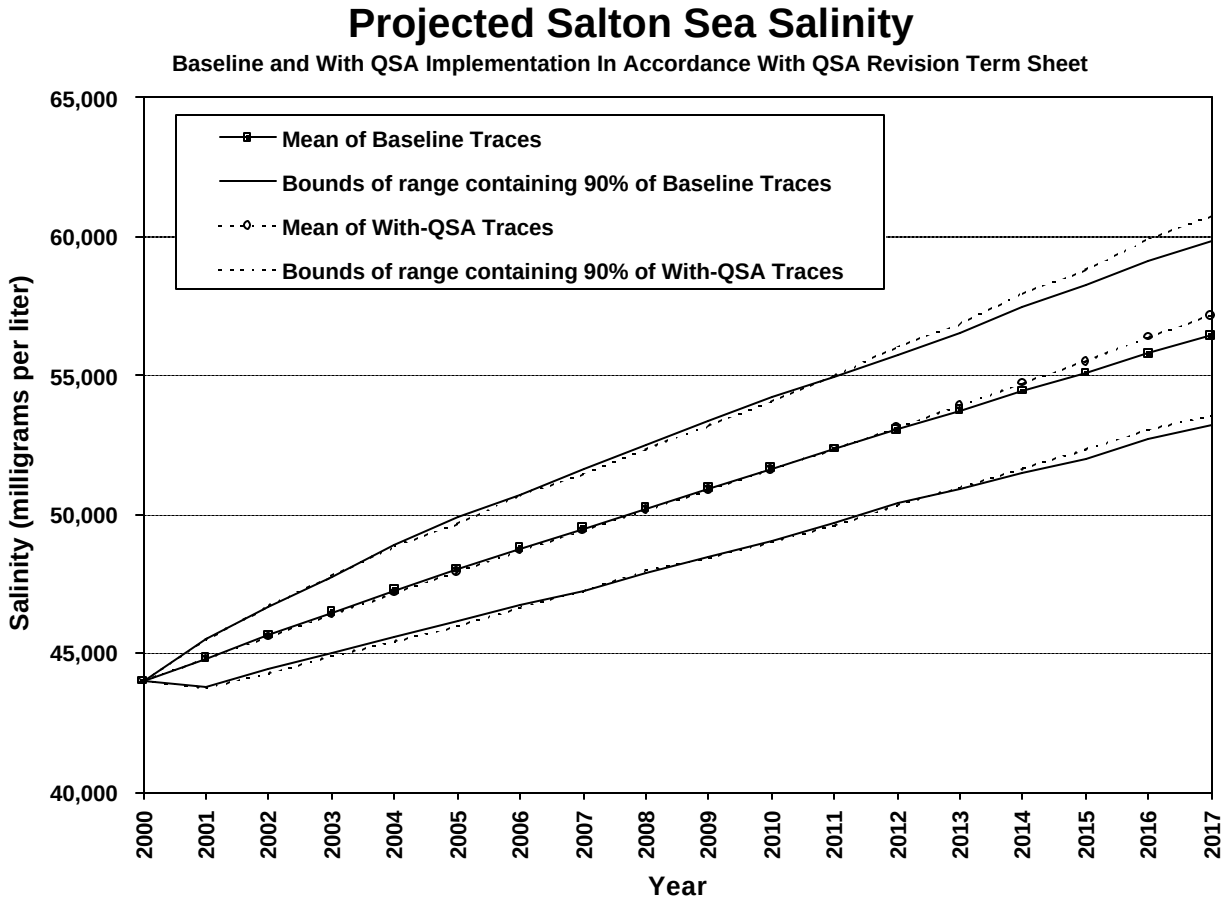


Table 2. Projected Salton Sea salinity in calendar year 2017 (Year 15 of the QSA) (values in milligrams per liter (mg/L))

	Baseline (mg/L)	With QSA (mg/L)	With QSA increase from Baseline (mg/L)	(percent)
Mean of traces	56,448	57,173	725	1.28
Upper bound of 90 percent range	59,814	60,744	930	1.55

Sensitivity of Salton Sea Salinity From Variation In Annual Inflow of Dissolved Solids

Salinity of the Salton Sea is a measure of the mass of dissolved solids contained in the volume of water within the Salton Sea. In calendar year 2000, the initial year of the Salton Sea Accounting Model traces, the mass of dissolved solids contained in the Salton Sea was approximately

456.16 million tons.[6] Average annual inflow of dissolved solids for the Baseline condition from calendar year 2000 through 2017 would be 3.93 million tons, of which it is estimated that 0.7 tons to 1.2 tons precipitates out of solution upon entry into the Salton Sea.[7] Thus the net annual rate of increase in the amount of dissolved solids contained in the Salton Sea is approximately 0.7 percent or less for the Baseline condition. For the with-QSA condition, annual average inflow of dissolved solids for the 2000 to 2017 period is estimated to be approximately 3.85 million tons, or 98 percent of the Baseline condition. Thus the QSA impact on the annual amount of dissolved solids that would be discharged to the Salton Sea has a negligible impact on the Sea's salinity over the first 15 years of the QSA.

Sensitivity of Salton Sea Salinity From Fluctuation in Surface Elevation

For the first 15 years of the QSA condition, the resulting impact to Salton Sea salinity as compared to the Baseline is almost entirely manifested through the QSA's effect on inflow and the resulting volume of water in the Sea. The volume of water in the Salton Sea is a function of its surface elevation.[8] Figure 2 shows the mean elevation and the range of elevations projected in 90 percent of the 1,000 model traces for the Baseline condition and the with-QSA condition. Similar to salinity, Figure 2 indicates that there is a slight departure in projected elevations between the Baseline condition and the with-QSA condition as shown in Table 3.

Table 3. Projected Salton Sea surface elevation in calendar year 2017 (Year 15 of the QSA) (values in feet from sea level rounded to the nearest one-tenth)

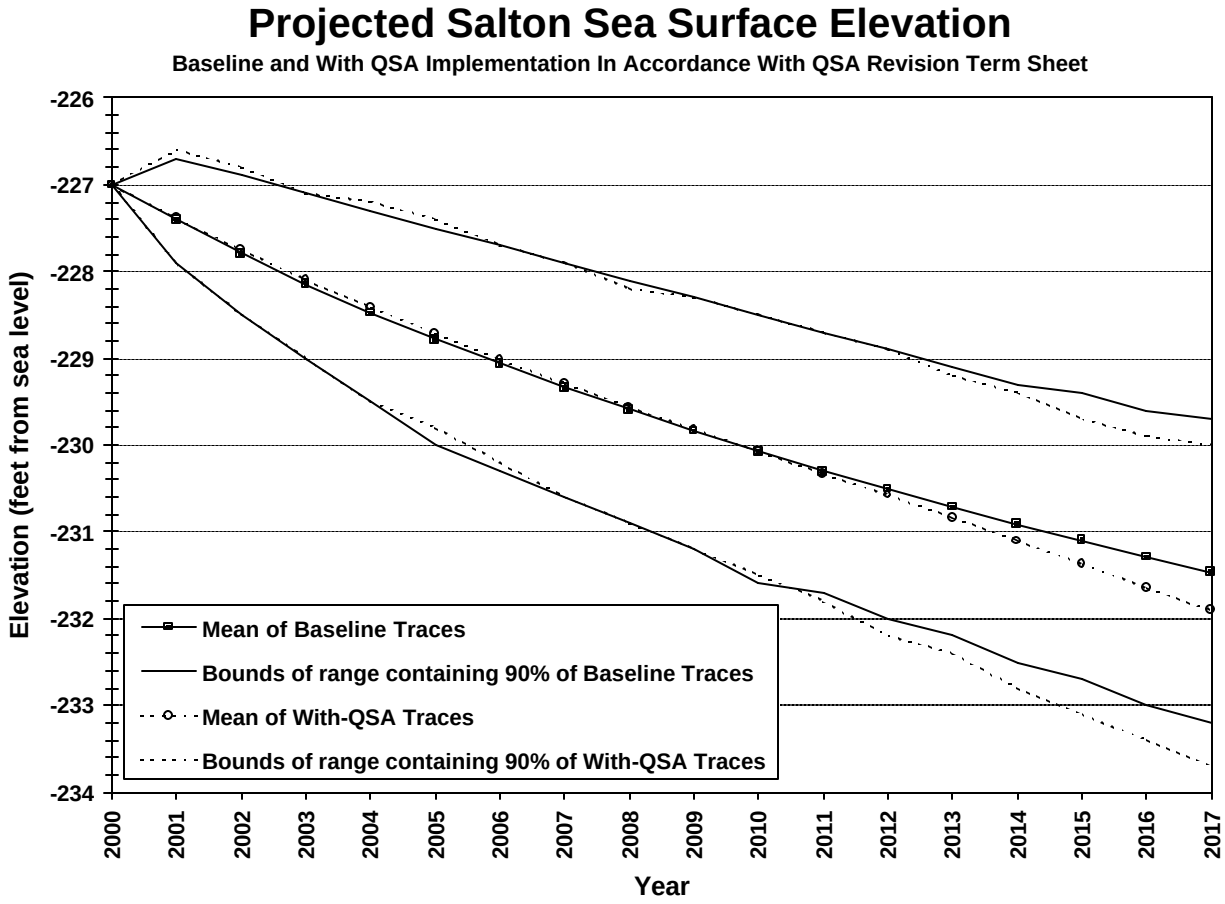
	Baseline	With QSA	With QSA decrease from Baseline
Upper bound of 90 percent range	-229.7	-230.0	0.3
Mean of traces	-231.5	-231.9	0.4
Lower bound of 90 percent range	-233.2	-233.7	0.5

[6] Based on the calendar year 2000 initial salinity of 44,000 mg/L and a water volume of 7,624,843 acre-feet for the initial surface elevation of 227 feet below sea level. Volume obtained from the Salton Sea Elevation/Area/Capacity data contained in Table 5.1 of Appendix F to the *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142)

[7] See page 20 of Appendix F to the *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142)

[8] See the Salton Sea Elevation/Area/Capacity data contained in Table 5.1 of Appendix F to the *Imperial Irrigation District Water Conservation and Transfer Project Final Environmental Impact Report/Environmental Impact Statement* (State Clearinghouse No. 99091142)

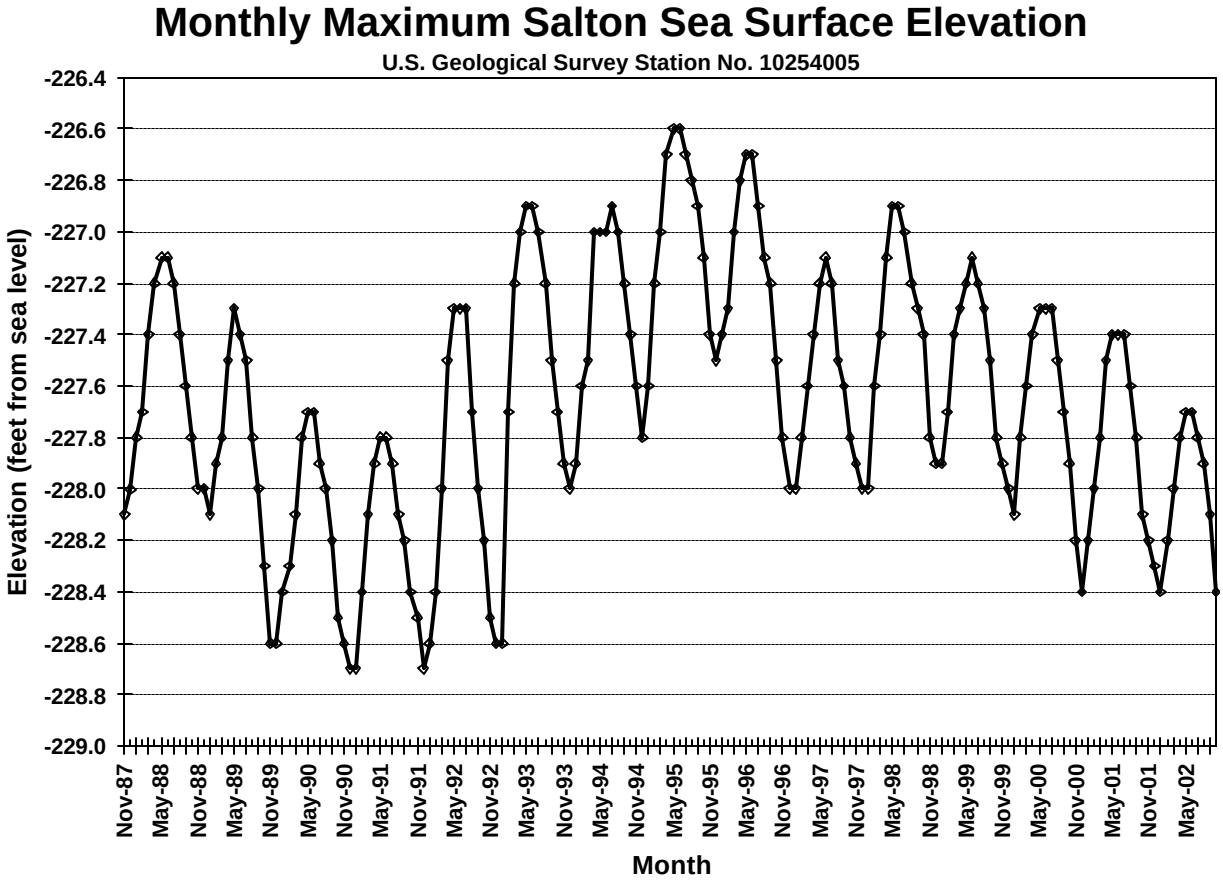
Figure 2.



The Salton Sea Accounting Model utilizes an annual time step and thus projects an average salinity that would occur for a given year. However, the variables that affect surface elevation (i.e., inflow and evaporation) vary in magnitude over the course of a year. As shown in Figure 3, this variation causes the surface elevation of the Salton Sea to fluctuate within an approximate one-foot range over a twelve-month period. Thus, salinity of the Salton Sea would be expected to fluctuate over the course of a given year as a result of the monthly fluctuation of the volume of water in the Sea during that year. Because the Salton Sea Accounting Model utilizes an annual time step, the resulting projected salinity and elevation represents the average condition for that year, during which the actual values would fluctuate above and below the projected average amount.

For example, the mean of the projected Baseline salinities for 2017 is 56,448 mg/L as stated in Table 2 herein. The mean of the projected Baseline surface elevations for 2017 is 231.5 feet below sea level (when rounded to the nearest one-tenth of a foot). Based on the mean salinity and mean elevation, the projected mass of dissolved solids in the Salton Sea in 2017 for the Baseline condition would be 505.99 million tons. An elevation fluctuation over the course of the year of 0.5 feet above and 0.5 feet below an average surface elevation of 231.5 feet below sea level would cause the water volume to fluctuate from a high of 6,705,285 acre-feet at elevation

Figure 3.



231.0 feet below sea level to a low of 6,480,546 acre-feet at elevation 232.0 feet below sea level, for a total difference of 224,739 acre-feet. The resulting range of salinities that would be expected to occur over the course of the year is shown in Table 4.

Table 4. Fluctuation of Salton Sea surface elevation over the course of a year and the resulting fluctuation in salinity based on Baseline projection for 2017 (assuming dissolved solids mass of 505.99 million tons)

	Elevation (feet from sea level)	Water Volume (acre-feet)	Salinity (mg/L)
High elevation	-231.0	6,705,285	55,500
Average elevation	-231.5	6,592,663	56,448
Low elevation	-232.0	6,480,546	57,425
Fluctuation from average	0.5	˜112,000	˜960

Conclusions

Implementation of the QSA during the first 15 years that the agreement is in effect will not result in a material increase in projected salinity levels at the Salton Sea

As discussed above there is a slight departure in projected salinities between the Baseline condition and the with-QSA condition. Projected salinity under the QSA condition is generally higher than the Baseline condition. The projected departure is greatest in calendar year 2017, which would be year 15 of the QSA. As quantified in Table 2 herein, the projected increase in salinity from the Baseline in year 2017 is 725 mg/L, as measured from the mean of the traces, and 930 mg/L, as measured from the upper bound of the range in which 90 percent of the traces fall. This increase is less than the annual fluctuation from the average salinity that would be observed in 2017 as a result of the normal fluctuation of Salton Sea surface elevation over the course of the year, which is approximately ±960 mg/L. Therefore, implementation of the QSA during the first 15 years that the agreement is in effect will not result in a material increase in projected salinity levels at the Salton Sea.

Implementation of the QSA during the first 15 years that the agreement is in effect will not foreclose alternatives for reclamation of the Salton Sea as summarized in Section 101(b)(1)(A) of P.L. 105-372

In undertaking the task delegated to the Secretary in Section 101(b)(1)(A) of P.L. 105-372, Section 101(b)(2)(C) of P.L. 105-372 limited the scope of the options the Secretary may consider by specifically directing the Secretary not to consider options that,

> "(i) relies on the importation of any new or additional water from the Colorado River; or
>
> "(ii) is inconsistent with the provisions of subsection (c)."

Subsection (c) refers to Section 101(c) of P.L. 105-372, which reads as follows:

> "(c) Relationship to Other Law.--
>
> "(1) Reclamation laws.--Activities authorized by this Act shall not be subject to the Act of June 17, 1902 (32 Stat. 388; 43 U.S.C. 391 et seq.), and Acts amendatory thereof and supplemental thereto. Amounts expended for those activities shall be considered nonreimbursable for purposes of those laws and shall not be considered to be a supplemental or additional benefit for purposes of the Reclamation Reform Act of 1982 (96 Stat. 1263; 43 U.S.C. 390aa et seq.).
>
> "(2) Preservation of rights and obligations with respect to the Colorado River.--This Act shall not be considered to supersede or otherwise affect any treaty, law, decree, contract, or agreement governing use of water from the Colorado River. All activities taken under this Act must be carried out in a manner consistent with rights and obligations of persons under those treaties, laws, decrees, contracts, and agreements."

With respect to the assumption of future inflows to the Salton Sea, Section 101(b)(3) of P.L. 105-372 directed the Secretary as follows:

> "(3) Assumptions.--In evaluating options, the Secretary shall apply assumptions regarding water inflows into the Salton Sea Basin that encourage water conservation, account for transfers of water out of the Salton Sea Basin, and are based on a maximum likely reduction in inflows into the Salton Sea Basin which could be 800,000 acre-feet or less per year."

Taking all of the provisions of P.L. 105-372 into account, the Department has reached the following conclusions with respect to the numbered items listed in Section 101(b)(1)(A) of P.L. 105-372 as to whether implementation of the QSA over the first 15 years would foreclose alternatives for reclamation of the Salton Sea:

Item (i): Reduce and Stabilize the Overall Salinity of the Salton Sea

Implementation of the QSA during the first 15 years through 2017 will not foreclose alternatives to reduce and stabilize the overall salinity of the Salton Sea that would be developed in accordance with P.L. 105-372. No activities to be implemented pursuant to the QSA and its related agreements would foreclose opportunities for the Secretary to implement a project to reduce and stabilize salinity.

Item (ii): Stabilize the Surface Elevation of the Salton Sea

Implementation of the QSA during the first 15 years through 2017 will not foreclose alternatives to stabilize the surface elevation of the Salton Sea that would be developed in accordance with P.L. 105-372. No activities to be implemented pursuant to the QSA and its related agreements would foreclose opportunities for the Secretary to stabilize the surface elevation of the Salton Sea.

Item (iii): Reclaim, in the Long term, Healthy Fish and Wildlife Resources and Their Habitats

As concluded above, implementation of the QSA during the first 15 years that the agreement is in effect will not result in a material increase in projected salinity levels at the Salton Sea. Accordingly, the impact of the first 15 years of the QSA to fish and wildlife resources and habitats that are sensitive to increases in salinity would be materially identical to that of the Baseline condition. Therefore, implementation of the QSA during the first 15 years through 2017 will not foreclose alternatives to reclaim, in the long term, healthy fish and wildlife resources and their habitats at the Salton Sea that would be developed in accordance with P.L. 105-372. No activities to be implemented pursuant to the QSA and its related agreements would foreclose opportunities for the Secretary to reclaim, in the long term, healthy fish and wildlife resources and their habitats at the Salton Sea.

Item (iv): Enhance the Potential for Recreational Uses and Economic Development of the Salton Sea

Implementation of the QSA during the first 15 years through 2017 will not foreclose alternatives to enhance the potential for recreational uses and economic development of the Salton Sea that would be developed in accordance with P.L. 105-372. No activities to be implemented pursuant to the QSA and its related agreements would foreclose opportunities for the Secretary to

implement a project to enhance the potential for recreational uses and economic development of the Salton Sea.

Approved:_____ Date:_____
Director, Robert C. Hight